



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/678,645	10/03/2000	Da-Shan Shiu	PA000472	6060
23696	7590	02/25/2004	EXAMINER	
Qualcomm Incorporated Patents Department 5775 Morehouse Drive San Diego, CA 92121-1714			LIU, SHUWANG	
			ART UNIT	PAPER NUMBER
			2634	9

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/678,645	SHIU ET AL.	
<b>Examiner</b>		<b>Art Unit</b>	
Shuwang Liu		2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 24 November 2003.

2a) This action is **FINAL**.      2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-35 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) 9,13,14,16,21,31,32,34 and 35 is/are allowed.

6) Claim(s) 1-8,10-12,15,17-20,22-30 and 33 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

## DETAILED ACTION

### ***Response to Arguments***

1. Applicant's arguments filed on November 24, 2003, have been fully considered but they are not persuasive. The Examiner has thoroughly reviewed Applicant's arguments but firmly believes that the cited reference reasonably and properly meet the claimed limitation as rejected.

Applicant's argument – "The examiner has stated that Kawable contains an address generator 320. .... The Applicant requests the Examiner to clarify if he is referring to the CPU 302 in Figure 3? .... In any case, the Applicants assert that Kawable does not contain an address generator ...."

Examiner's response – As shown in figure 3, there are two blocks (CPU 302 and Buffer RAM 301) to perform the transmission and the reception. It is well known that the memory must have addresses for writing and reading and CPU has addresses in corresponding to the memory addresses for writing and reading. Therefore, the CPU performs the function of an address generator (for example, see column 9, lines 35- 38 of US 6,668,343 in the cited reference). In this case, the structure of figure 10 is included in the CPU where the 808 is the address generator (column 14, lines 43-49).

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 1, 3-8, 10-12, 18-20, 22-30 and 33 are rejected under 35 U.S.C. 102(a) as being anticipated by Kawable (EP 0998052A, see IDS, paper #5).

As shown in figures 1, 2 and 5, Kawable discloses:

(1) regarding claim 1:

A buffer structure (203) for storing symbols received via a plurality of channels, wherein each channel is associated with a particular time interval over which the received symbols are subsequently processed, the buffer structure comprising:

a buffer (203) partitioned into a plurality of sections, wherein one section is assigned to each channel and dimensioned to store symbols expected to be received over the associated time interval; and

an address generator (302) coupled to the buffer and operative to provide addresses for writing symbols to the assigned sections.

(2) regarding claim 3:

wherein each channel corresponds to a physical channel defined by W-CDMA standard (column 4, lines 54-57).

(3) regarding claim 4:

A buffer structure for storing symbols received via a plurality of channels, wherein each channel is associated with a particular time interval over which the received symbols are subsequently processed, the buffer structure comprising:

a buffer (203) partitioned into a plurality of sections, one section for each

channel, wherein the plurality of sections are assigned to the plurality of channels based on the associated time intervals; and

an address generator (302) coupled to the buffer and operative to provide addresses for writing symbols to the assigned sections.

(4) regarding claim 5:

wherein each channel corresponds to a transport channel defined by W-CDMA standard (column 4, lines 54-57).

(5) regarding claims 6 and 7:

wherein the time interval associated with each channel corresponds to a transmission time interval (TTI) also defined by the W-CDMA standard (column 4, line 54-57, it is inherent that TTI is selected from a group consisting of 10 msec, 20 msec, 40 msec, and 80 msec according to the W-CDMA standard).

(6) regarding claim 8:

wherein the plurality of sections are assigned to the plurality of channels in descending order of the associated time intervals (column 5, lines 10-33).

(7) regarding claim 10:

wherein the buffer is partitioned starting from an initial location and continuing along a first direction of the buffer (column 5, lines 10-33).

(8) regarding claim 11:

wherein each section is defined starting from the initial location or the end of a previous section (column 5, lines 10-33).

(9) regarding claim 12:

wherein each section is sized to store all symbols expected to be received within the time interval associated with the channel to which the section is assigned (column 5, lines 10-40).

(10) regarding claim 18:

A receiver unit operative to process symbols received via a plurality of channels in a communication system, wherein each channel is associated with a particular time interval over which the received symbols are subsequently processed, the receiver unit comprising:

a channel processor (201) operative to process samples received for the plurality of channels to provide symbols;

a buffer (203) coupled to the channel processor and operative to store the symbols from the channel processor, wherein the buffer is partitioned into a plurality of sections, one section for each channel, and wherein the plurality of sections are assigned to the plurality of channels based on the associated time intervals; and

a data processor (202) coupled to the buffer and operative to retrieve symbols for a particular traffic from an assigned section of the buffer and to process the retrieved symbols.

(11) regarding claim 19:

wherein each channel corresponds to a transport channel defined by W-CDMA standard, and wherein the time interval associated with each channel corresponds to a transmission time interval (TTI) also defined by the W-CDMA standard (column 4, line 54-57).

(12)regarding claim 20:

wherein the buffer is partitioned starting from an initial location and continuing along a first direction of the buffer (column 5, lines 10-33).

(13)regarding claim 22:

wherein the symbols from the channel processor are stored to permuted locations in the buffer to achieve a second de-interleaving (column 5, lines 10-33 and column 10, lines 18-31).

(14)regarding claim 23:

wherein symbols for a particular traffic are retrieved from permuted locations in the assigned section to achieve a first de-interleaving (215).

(15)regarding claim 24:

further comprising: an address generator (302) coupled to the buffer and operative to provide addresses for writing symbols to the plurality of sections.

(15)regarding claim 25:

further comprising: a controller (401) coupled to the channel processor and the data processor, the controller operative to direct writing of symbols to the plurality of sections and reading of symbols from the plurality of sections.

(16)regarding claim 26:

further comprising: a decoder (510) coupled to the data processor and operative to receive and decode symbols processed by the data processor.

(17)regarding claim 27:

A receiver unit comprising the channel processor, buffer, and data processor of

claim 18, and further operative to process a downlink data transmission in accordance with W-CDMA standard (column 4, lines 54-57).

(18)regarding claim 28:

A receiver unit comprising the channel processor, buffer, and data processor of claim 18, and further operative to process an uplink data transmission in accordance with W-CDMA standard (column 4, lines 54-57).

(19)regarding claim 29:

A method for storing symbols received via a plurality of channels, wherein each channel is associated with a particular time interval over which the received symbols are subsequently processed, the method comprising:

identifying (201) the plurality of channels to be received and processed; determining a time interval associated with each channel;

assigning (201) a plurality of sections of a buffer to the plurality of channels in accordance with the associated time intervals; and

storing (203) symbols received from the plurality of channels to the plurality of assigned sections.

(20)regarding claim 30:

wherein each channel corresponds to a transport channel defined by W-CDMA standard, and wherein the time interval associated with each channel corresponds to a transmission time interval (TTI) also defined by the W-CDMA standard (column 4, lines 54-57).

(21)regarding claim 33:

wherein the plurality of sections are defined starting from an initial location and continuing along a first direction of the buffer (column 5, lines 10-33).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawable (EP0998052A, see IDS, paper #5) in view of Easton et al. (WO 9610873A, see IDS, paper #5)

Kawable discloses all of the subject matter as described above except for operating as a circular buffer as recited in claim 2, maintaining a write pointer as recited in claim 15,16 and 17.

However, QUALCOMM INC teaches a circuit buffer with a writer pointer for writing the address for each section (page 14, lines 8-34, page 22, line 6-page 24, line 18, and figures 6-8).

It would be desirable to have more efficient method to control the reading and writing from or to a buffer using pointer in a communication system. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention

to use a pointer as taught by QUALCOMM INC. in the system of Kawable in order to provide more efficient management to access the data from buffer.

***Allowable Subject Matter***

6. Claims 9, 13, 14, 16, 21, 31, 32, 34 and 35 are allowed.

***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2634

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shuwang Liu whose telephone number is (703) 308-9556.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin, can be reached at (703) 305-4714.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

**(703) 872-9306 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



Shuwang Liu  
Primary Examiner  
Art Unit 2634

February 19, 2004